# FINAL
# Recommendations Regarding Water Allocation Policies as They Affect Public Water Systems in New England

*Version 12/13/02*
*Water Resources Committee*
*New England Water Works Association*[1]

## Introduction

In response to increasing concerns about water supply permitting delays and limits and concerns with associated instream flow-setting policies, the New England Water Works Water Resources Committee developed a regulatory screening matrix on which this paper is based. Using this matrix as a guide, regulatory officials from each New England state were asked a series of questions related to water allocation. The responses to these questions were then consolidated to focus on the seven major areas covered in this paper. The matrix has now gone through several revisions by the committee, received comments from the EPA Regional Administrator for Region 1[2] on the initial findings and from some states as part of a subcommittee meeting of the New England Interstate Water Pollution Control Commission Drinking Water Administrators Workgroup.

The purpose of developing the matrix was to see whether water supply permitting concerns reported in some states were identified New England-wide, and to help New England Water Works develop fair and reasonable policy recommendations for water systems, EPA and state regulators to consider. This "white paper" will be submitted to the New England Water Works Association President for the Association's consideration in developing a policy.

## Summary of Issues

The Committee considered many issues relevant to water allocation in New England. Key issues are summarized as follows.

### 1. Allocation Priority

There is a growing concern that the allocation of water resources by state regulatory agencies does not adequately address water supply needs and interests, specifically with respect to public health and safety. All of the state regulatory agencies, and EPA, are being lobbied with competing interests for water resources. Water supply is one of these interests, yet it seems to be losing ground as a priority throughout the region, as more organized and well-funded environmental, hydropower, business and recreation groups understandably promote their interests.

Only two states give water supply public health issues specific priority in their regulations (Massachusetts and Rhode Island), but even in these states, water industry representatives feel they have little control or input, particularly on the permit process. Although the permit process

[1] Note that this paper as revised is a working document and has not been submitted to or approved by the Board of Directors of New England Water Works Association. Also, the latest edits have not necessarily been reviewed by the Water Resources Committee in full.

[2] These comments were received as part of a meeting held between the Regional Administrator, Mr. Robert Varney, and a group of New England Water Works Association representatives that included state association representatives and committee representatives.

is always well intended from the agency standpoint, the general feeling from water supply professionals has been one of unjust red tape, delay and unduly high cost for allowing supplies to come on line, although in some cases the water supplier may share responsibility for delays. Some water suppliers have said they cannot meet demands except through continuous local emergency water restrictions. This may stem from an apparent difference of opinion between some agencies and the engineering community on how much water is needed for safely meeting demands.[3]

Although most agencies that regulate water supply operations may agree with these desired engineering factors, withdrawals are sometimes regulated by other agencies. It seems to be a better situation when the water supply regulatory arm of the agency has either control of or significant input into withdrawal permitting. Otherwise, contrasting agency goals and incomplete understanding of water supply requirements may result in uncomfortable departures from traditional safety factors for supplies.

***Recommendations:*** EPA and states should recognize the priority of water supply, insofar that it is used wisely for public health and safety-related purposes,[4] in its development of water allocation policy. Further, all states should likewise recognize water supply as having priority over other competing demands and losses that affect streamflows.[5] States should also set up a structured and streamlined review process for new source approvals, increased withdrawals and source redrilling/relocation that sets a timetable and identifies data needs upfront. States could also streamline water supply withdrawal permitting by making the regulatory agency entrusted with the allocation decision making process responsible for ensuring that public water supply needs are provided for. To justify such a priority, water suppliers should take responsibility for ensuring that water withdrawals are being used wisely for public health and safety-related purposes via programs that promote efficiency

States and EPA can assist in fair allocation decisions by making all research and policy equally inclusionary for water suppliers and other stakeholders. A fair allocation should include quantification of all uses and losses (not just water supply) that may affect streamflow. Water suppliers should only be responsible for their direct impact, not that of general growth and development that they often have no control over. Any allocation assessment should be deliberately and cautiously done with the full knowledge and input of the water suppliers who may be affected by assessments.

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[3] Usually considered the ability to meet the maximum day demand with the largest well offline, as this situation is reasonably likely to occur on summer days with lightning strikes of wells or other problems.

[4] All subsequent references in this paper to affording the highest water-allocation priority to water supply assume that it will be used with care for public health and safety-related purposes.

[5] Minimum streamflows are defined herein as sustenance of existing fisheries or a return to the most recent condition that supported fisheries, not a return to 'better than virgin' conditions, particularly in already developed watersheds. In undeveloped watersheds, new water supply withdrawals should be allowed on a priority basis (over other types of withdrawals) as long as they do not result in the loss of existing fisheries. In highly stressed developed basins, new withdrawals that could impact fisheries should be balanced by "trading" of infiltration credits (such as stormwater, wastewater or land use regulations that would result in more infiltration) to allow needed expansion of the water supply.

2. Management of Supply

Although New England receives over 45 inches of precipitation annually in much of the region, intense development of the central, southern, and coastal areas has resulted in severe water shortages in some areas and difficulties obtaining new supplies in others. This phenomenon has generally been marching northward in close concert with development of industrial and residential water demands.

While in northern New England, agriculture, hydroelectric and recreational uses still present significant competing demands, imperviousness (mostly paving) has resulted in tremendous losses of groundwater and surface water supplies in more developed areas. This occurs as stormwater runoff is generated from newly impervious areas that once filtered groundwater recharge. Imperviousness has dramatically affected the hydrologic cycle in some areas, with groundwater recharge severely interrupted and streamflow, water quality and groundwater levels seriously affected.

At the same time, while centralized sewer systems have sometimes helped water systems overcome groundwater pollution, they can also impact water availability by diverting groundwater flow unintentionally via inflow/infiltration into sewers and intentionally via the direct export of sewage out of a given basin. Combined with losses from imperviousness, the result may be a significant decline in the availability of groundwater and surface water for water supplies in the future.

The six states polled varied widely in their treatment of other demands and other losses described above. For example, in New Hampshire the Department of Environmental Services (DES) recently issued a "Stormwater as a Resource" policy that encourages the recharge of stormwater to try to preserve the hydrologic cycle. In Massachusetts, Comprehensive Wastewater Management Planning is encouraged, and decentralized sewers are favored by Massachusetts Department of Environmental Protection (DEP) in the Charles River Basin. Other laudable efforts include the Massachusetts Water Resources Authority's use of infiltration galleries to make up for imperviousness losses to groundwater recharge caused by the 110-mg Norumbega Storage Reservoir.

Despite these successes, there remains a significant threat to future water supplies. The committee found little comprehensive New England-wide attention to these other losses. Instead, water systems have traditionally been the first and foremost target for reducing demands. In some cases this may be because the water supply withdrawal is the largest withdrawal, but the feeling of being "singled out" with little attention to other demands seems inequitable to many water suppliers. Industrial, agriculture, hydroelectric and recreational demands are treated in various ways in each of the states, with no uniformity. Some states regulate larger industrial and agricultural withdrawals; however, smaller withdrawals are usually exempted even though multiple small withdrawals can quickly add up to a significant impact.

While most conservation measures are geared towards managing demand, more attention should be given to managing supply. Hydroelectric uses are generally regulated by the Federal Energy Regulatory Commission, and many storage impoundments are managed for purposes of flood control, hydropower production or recreation, with public water supply needs often not considered as an important component of water resource management. Most of the recreational allotments have occurred in the context of hydroelectric licensing projects, e.g., minimum stream

flow releases for rafting and the like. The human need for water and protection of public health and safety should advocate a higher level of priority in reservoir management practices. Additional flow releases for public water supply would augment flows for instream uses while providing environmental benefits.

***Recommendations:*** EPA and/or States should consider and quantify other demands and losses to streamflows and make efforts to reduce these losses. Additional efforts should be put to re-establishing hydrologic cycles in developed areas and to placing lower permit thresholds on industrial and agricultural uses. The agencies and all water supply professionals should vigorously advocate stormwater and wastewater management systems that preserve and restore a more natural hydrologic cycle, particularly groundwater recharge, with adequate pretreatment/treatment when needed to protect quality. EPA/States should always consider existing and future public water supply needs as a top priority in water resource management for flood control, hydropower, recreation or agriculture.

3. Storage, Interconnection and Transfer Policies

One of the greatest challenges facing today's water supplier is the ability to meet peak seasonal demands. Interconnections with other water systems for emergency purposes and for regionalizing water supplies has long been a desirable method of operations, however, these interconnections may sometimes be prohibited based on movement of water from one basin to another. As a result of the terrorist threat to water supplies, these interconnections have become more important than ever.

Surface water supply storage in reservoirs is also an important factor in meeting peak water supply demands during the summer. Flood skimming has been used regularly and in some cases may involve interbasin transfers for storage and later distribution. At the same time, most states are trying to remove dams to enhance movement of anadromous fish and for wetlands restoration.[6] While the restoration of wetlands and fisheries is a laudable goal, the potential use of these reservoirs for valuable and scarce water supply storage should not be overlooked in the decision-making process of which dams to be removed.

As the potential for new supplies dwindles from development pressures and instream flow issues, storage options are a viable and important method for water supplies to help meet demands during the summer. Although New Hampshire and Connecticut encourage new storage reservoirs, none have been developed in any of the states save for a couple of quarries in Massachusetts. Alternative storage methods are now being considered in New Hampshire, where aquifer storage is being used to retain water for use during low flow periods. Despite these successes, water suppliers developing new storage reservoirs are confronted with daunting permitting issues from the U.S. Army Corps of Engineers, state wetland permitting agencies and sometimes the US EPA. Dredging of reservoirs for supply expansion is done routinely in some states, but not in others. Few reservoir expansion projects through dredging have occurred in the last ten years in New Hampshire, Connecticut and Massachusetts. Also, regulations in at least three of the six states severely restrict the interbasin transfer of water for any use. The bottom line is that practical solutions to dwindling instream supplies must consider storage options, but

[6] The Committee is investigating whether states have removed any dams that could affect water supply storage. New Hampshire has responded that this is a criterion they consider. No other states have responded.

it has to be less costly and time-consuming for water suppliers to develop new storage reservoirs if it is to be a real option to help meet instream environmental flow needs.

***Recommendations:*** EPA and the states should consider encouraging raw water storage to supplement low flow conditions, including the use of alternative storage reservoirs such as quarries for water supply; and the use of aquifer storage for supplemental use. EPA/states should ease or streamline dredging permits for the maintenance of water supply reservoirs. The US Army Corps of Engineers, due to their role in issuing Section 404 wetland permits, should also be involved in permit streamlining. Increasing storage, particularly offline storage, may be the best environmental solution for many water short water supplies, but it needs to be easier and less costly to permit.[7] EPA and the states should support interconnections between water supplies, even where these may result in interbasin transfers.

4. Identification of Future Sources of Water Supply and Development of Redundant Supplies

As regional water supply demands have grown and new sources of supplies have become increasingly difficult to permit and develop, the ability for water suppliers to "manage" their supplies has become increasingly difficult. Rather than having flexibility to alternate sources of supplies based on potential environmental impacts, suppliers are often required to use whatever supply is available. This may affect the flexibility of the supply to respond to emergencies.

The time and cost for new source approvals and increasing withdrawal limits has expanded dramatically over the last 20 years in the more developed states. Finding new sources is typically left up to local suppliers, who may be denied or severely restricted after years of work and sometimes hundreds of thousands of dollars. While in some cases the water supplier or their consultant may be responsible for some of the delays, no matter who is to blame, the end result of these lengthy permitting exercises is that alternate and potentially good locations may be developed for housing or other uses in the meantime. Regulatory frameworks and policies must place greater emphasis on the timeliness and assisting suppliers with the complex issues to provide a more cooperative goal of increasing available water supplies. Emergency or redundant supplies must also become more readily permittable in today's atmosphere of heightened security.

***Recommendations:*** EPA, the states and water suppliers must work together cooperatively towards the common goal of finding and preserving new water supplies for future use. This should include financial assistance to water suppliers, regulatory streamlining, and improved regulations or other assistance for protecting these potential future supplies. Along with this; EPA and the states should encourage the development of emergency sources to address heightened security, by reducing the permitting and regulatory hurdles.

[7] Federal level permits for new or expanded reservoirs; offline storage or dredging to expand storage may include the U.S. ACOE Section 404 and Chapter 91 Rivers and Harbors Permits, Section 401 Water Quality Certifications (state level), and state/local wetlands permits. The permit process for a small project may take 2-10 years or more and cost over $100,000 not including land or infrastructure costs, and ultimate denial may result.

In the meantime, water suppliers need to be included and recognized as an important voice and partner in regulatory policy setting for withdrawals.[8]

5. Conservation and Droughts

In addition to the careful management of supplies, most water systems recognize that demand management is also critical to the equation. However, in most cases the water supplier has little control over the homeowner or development methods that clear-cut and remove topsoil – factors that lead to high peak demands and homeowners who must choose between conservation and a nice landscape. Although the way a community develops has a major impact on its ultimate ability to conserve, most conservation programs focus on the water supplier as a "policeman" of water use, a difficult and ineffective situation in many communities.

Water conservation requirements vary widely among the states and are in most cases left to the water system to define, implement and enforce (often on an unwilling population). Most states have no specific conservation requirements, with a few notable exceptions such as the recent Massachusetts policy on outdoor water use and New Hampshire's new "stormwater as a resource" policy, which emphasizes outdoor water use restrictions. These are helpful policies for water suppliers since lawn irrigation practices are one of the major demand drivers in conflict with environmental low flow needs, and conservation requirements should address outside water use. While some states, such as Rhode Island, are beginning statewide proactive demand management programs, it has not been a major focus in most areas. Yet water suppliers and conservation would greatly benefit from a more proactive, consumer-based conservation initiative from states and the EPA. It should consider mandatory water conservation measures in new construction, limits on clearing of developments and restrictions on export of topsoil from development sites. It could also consider water reuse as is happening in Rhode Island, and stormwater as discussed elsewhere in this paper.

Significant water use accountability measures, such as customer metering, are only required in Massachusetts or if federal funding is involved (Maine). Master meter calibration is only required in Massachusetts. These crucial tools for water conservation should be phased in over a long period of time with financial assistance for initial customer metering projects.

In drought emergencies, Massachusetts water suppliers who have a procedure for declaring a public water supply emergency can be allowed the use of unregistered source waters and supply by Massachusetts Water Resources Authority (MWRA) without the requirement of interbasin transfer approval. Other states do not apparently allow alteration of allocations for drought emergencies, although this is probably because they do not have stringent allocations, per se.

***Recommendations:*** EPA and/or the states should develop uniform water conservation guidelines that address outside watering and that also apply to industries (in the form of outdoor watering guidelines for industry, or water use efficiency guidelines for industry). EPA and the states should also assist in educating homeowners and businesses in water supply conservation through a comprehensive program of press releases; guidance for planning boards on new developments;

[8] Note that this has already begun In Connecticut, where a recent Report to the General Assembly on State Water Allocation Policies (commonly referred to as the Diversion 2000 Report), addresses a lack of water allocation policies. As a result of this report, Connecticut's Water Planning Council was formed and is currently developing a comprehensive water allocation policy that has water supply representation.

guidelines issued to industries, etc. Uniform guidelines and assistance will be helpful to many systems, particularly small systems that lack resources to do these actions on their own. Water suppliers should demonstrate their commitment to responsible use of water resources by implementing progressive conservation programs. Partnering with river, watershed, and other environmental groups may be an effective means to this end.

Water systems should vigorously participate in allocation policies, and for their part should make best efforts to implement Comprehensive Water Conservation Programs and to develop long-term Water Supply Management Plans that give due consideration to environmental factors. All water suppliers should be conscious of water restrictions during drought conditions. Water system professionals should always encourage wise water use and be conscious of water restrictions in neighboring communities during droughts.

6. Funding; *Recommendations:*

The public has an expectation that governmental agencies should implement environmental programs and regulations that guard public health and provide a clean environment. EPA can assist and improve how water allocations provide for public health and safety in a number of ways. Some of these related to funding that the agency could provide are listed below.

Fund scientific studies by qualified and unbiased groups to support the establishment of fair allocations[9] for water suppliers and other uses, with water systems as the highest priority use. This should include science-based studies of minimum fisheries needs. Emphasis should be placed on those basins without adequate data, with sensitivity to basins of less than 50 square miles.

Develop and fund a multi-agency task force to streamline the permit process for new or expanded reservoirs or maintenance dredging. The task force should include water suppliers, EPA, fisheries representatives and the U. S. Army Corps of Engineers at a minimum. In addition, the task force should evaluate how to reduce the permitting barriers to flood skimming and constructing offline storage reservoirs that could help ease the pressure on instream fisheries.

Fund the development and implementation of a comprehensive strategy to combat development impacts on water supplies and ecosystems in New England. It should include the development of a methodology where communities in highly stressed basins could "trade" stormwater, wastewater, land use or other infiltration for new/expanded water supply withdrawals. In undeveloped basins, the strategy should identify how to preserve adequate water supply sources for the future and how to minimize the impacts of the eventual development on water resources.

Fund comprehensive regional water searches to provide assistance to communities/states in land acquisition for water supply purposes.

Make water resources funding in existing programs relate more directly to protection of recharge of water supplies, favoring projects that enhance recharge over those that strictly protect non-water supply water resources.

[9] A "fair" allocation is defined herein as one where the allocation matches the impact. Stressed basins are the result of many complex factors and rarely are due to water supply withdrawals alone. Much of the stress results from development of the basin including paving over of much of the recharge and multiple withdrawals for a variety of uses besides water supply. There are crucial human needs that must be met, and water supply allocations need to meet these minimum needs and must not overstate the water supply impact on streamflows. By unfairly focusing only on water supply withdrawals as the source of the problem, regulatory agencies and municipalities have yet to address difficult urban sprawl and development issues that are beyond the control of the water supplier.

Fund a public education program related to imperviousness and its impact on water supplies and methods that local development boards can use to correct/prevent these problems.

Fund and implement training of town officials in preservation of water supplies through supply management techniques (zoning, planning, etc.), preservation of recharge, etc.

Require states, as part of their funding, to encourage/fund emergency interconnections of systems in response to potential terrorist threats.

Funding should be provided to assess uniform regional drought management procedures, including public outreach.

7. Water Supplier Input

Throughout the matrix survey, states were asked how water suppliers had been involved in the process of regulation. As a generalization, states where water supply withdrawals and allocations are regulated directly by the environmental arm of the regulatory agency as opposed to the water supply arm appear to have less water supplier input and more anecdotal concerns from water systems. This may be because of organizational separation and/or the complexity of water supply issues. This needs to be evaluated further, but several Committee members feel that it is crucial for water supplier to be heard and to become a partner in the process rather than being acted on as a "regulated industry".

While all states agreed that one or more streams have been identified as flow impaired (and therefore presumably in need of some type of allocations), few studies have linked these impairments solely to public water supply withdrawals. Also, varying methodologies are being used by state regulators to identify minimum fisheries requirements, some of which are perceived by water suppliers as overly conservative and biased toward instream needs.[10] Some systems have reported being asked to provide "better than virgin" instream flows using questionable data on small streams.

***Recommendations:*** Water systems are partners with EPA and state regulatory agencies in protecting public health and safety. States and EPA should give public water supply concerns a major, if not predominant voice in allocation policies over competing demands. It is important that public health and safety issues be balanced with environmental concerns. Water suppliers and other stakeholders should always have equal access to data and should be included in policy-making, as they already are in some states.

Water suppliers should become involved in the science of establishing instream flow limits that may affect the outcome of their water supply withdrawals, and should make sure that they understand the scientific and technical basis of what is being applied to their stream reaches.

[10] The most commonly used method to establish protected flows is Aquatic Base Flow (ABF), although it is not applied uniformly. The ABF is a conservative, calculated flow referring to Median August Flow with a default value of 0.5 cubic feet per square mile (cfsm). However, site-specific studies using methodologies such as the Instream Flow Incremental Methodology (IFIM) are more scientifically accurate, particularly in small basins.